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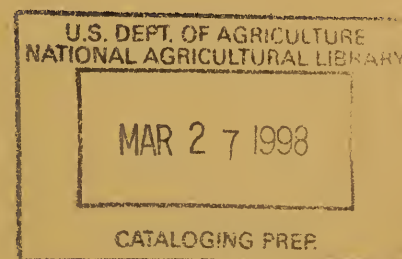
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*Soil Conservation*

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# *Policy and Procedure for Development of National Inventory of Soil and Water Conservation Needs*

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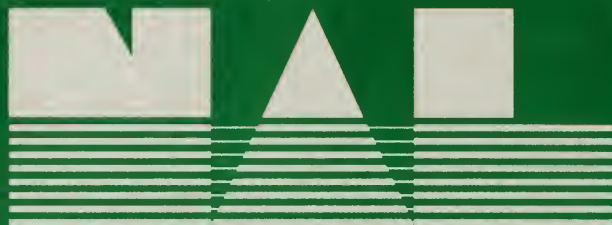
Prepared by the Department Committee:

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Agricultural Research Service  
Commodity Stabilization Service

Federal Extension Service  
Farmers Home Administration  
Forest Service  
Soil Conservation Service

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**United States  
Department of  
Agriculture**



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## FOREWORD

Our nation is blessed with an abundance of soil and water resources. Our people have used these resources to provide the food, fiber, and raw materials for industrial use necessary to attain a standard of living unsurpassed.

Our greatness as a nation has in large measure resulted from the initiative, industry and creativeness of citizens applying themselves in their private capacities, and using the rewards from their efforts to provide better living for themselves and their families. The abundance of our blessings has made this possible.

Our resources are not, however, inexhaustible. They must be cared for and used wisely that their productiveness will be continuing. To assure their wise use we need basic facts about the physical problems of conservation--their magnitude and relative urgency.

The National Inventory of Soil and Water Conservation Needs will provide these basic facts. From this inventory better determinations can be made for the use of both public and private effort to achieve more effective conservation use of our land and water resources. The successful compilation and subsequent use of such an inventory can best be achieved through the maximum of cooperative effort in its preparation by all concerned public and private groups.

The Department of Agriculture and all of its agencies is prepared to fully carry forward this cooperative endeavor.



Secretary



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# POLICY AND PROCEDURE FOR DEVELOPMENT OF NATIONAL INVENTORY OF SOIL AND WATER CONSERVATION NEEDS

## GENERAL POLICY

This policy is developed within the framework of the Secretary's Memorandum 1396 (Appendix).

**Objective:** The Department of Agriculture has constant need for current information on conservation needs that will aid in carrying out its responsibilities in providing for adequate conservation of the Nation's soil and water resources. There is need for a systematic collection of facts, for each county in the United States and for appropriate subdivisions of the Territories, and for watersheds and river basins, regarding the soil and water resources, the problems in their use, and an estimate of the areas needing treatment necessary to maintain and improve their service for all the people in line with national objectives. The purpose of this inventory, which is known as the National Inventory of Soil and Water Conservation Needs, is to assemble such facts.

**Soil and Water Conservation Defined:** Soil, water, forest, and range conservation is the protection, use, maintenance, and improvement of these resources to best serve both private and public interest in providing adequate food, fiber, forest products, recreation, and wildlife resources now and in the future.

Conservation of soil, water, and plant resources is accomplished through making adjustments in land use; protecting land against soil deterioration; rebuilding eroded and depleted soils; stabilizing runoff and sediment-producing areas; improving cover on crop, forest, pasture and range, and wildlife lands; retaining water for farm and ranch use and to reduce water and sediment damage; and water management, distribution, and disposal obtained by draining or irrigating land on existing farms or ranches. Areas with excess or inadequate water (or having adverse climatic conditions) will be considered as needing conservation treatment when necessary for solution of land use or management problems on farms and ranches, but will not be included when treatment is primarily to develop new land or for more intensive use of lands now in production.

For the purpose of this inventory, conservation needs will be expressed in terms of the acres that require treatment in order to maintain production in line with the national interest as interpreted from the economic framework. Consideration must be given to regional and local conditions and the needs of the people for family income.

**Basic Economic Framework:** The following assumptions are made for administrative use in connection with the National Inventory of Soil and Water Conservation Needs. It is felt that these will provide for greater uniformity and accuracy in the estimates. Specifically, they are as follows:

1. There will be a population increase in the United States for the period 1953 to 1975 from 162 to 210 million. The projected increase in population and moderate rise in per capita consumption of farm products will increase requirements in 1975 to about 40 percent above 1953. Since production is in excess of utilization, an increase in farm output of around 30 percent will meet projected requirements.
2. Total acreage of crops, including cropland pasture, will be about 6 percent greater in 1975 than in the period 1951-53.<sup>1</sup>
3. With the expected cropland acreage and fuller adoption by farmers of available technical knowledge in crop production, it appears that market demands in 1975 can be

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<sup>1</sup> Agricultural Land Resources in the United States, by Hugh H. Wooten and James R. Anderson, U. S. Dept. Agr. Inf. Bul. 140. June 1955. Farm Output-Past Changes and Projected Needs, by Glen T. Barton and Robert O. Rogers, U. S. Dept. Agr. Bul. 162 Aug. 1956.

met if certain adjustments are made. Significant shifts will be required in the crops grown.<sup>2</sup> There will also be need for shifts in major land uses, including such changes as the clearing, draining, and irrigating of land for cropland and pasture, reforestation of less productive croplands, and loss of agricultural lands to non-agricultural uses.

4. The projected increase of population and growth of the Nation's economy will expand the demand for timber products. The 1975 demand for wood products in total (industrial wood and fuel wood) may be as much as 30 percent above 1952 consumption; the demand at year 2000 may be as much as 80 percent above 1952 consumption.<sup>3</sup> To meet these timber requirements, more intensive management of all available commercial forest land will be needed.<sup>4</sup> It will be imperative that commercial forest lands presently nonstocked or poorly stocked be restored to productive conditions. The more critical problems will relate chiefly to increasing the growth of softwood sawtimber and the improvement of productivity of farm and other small forest-land ownerships.
5. Demands for recreation facilities and for wildlife will increase more rapidly than the increase of population.
6. To meet the water requirements of the increased population, which will be accompanied by expansion of industry, intensified agriculture, and other uses, there will be increased competition for available water supplies. This will result in an expansion of water-resource development.
7. Land owners and operators will be expected to spend no more on conservation measures than will yield a reasonable return to their capital and labor.
8. The public will provide expenditures for soil and water conservation measures in addition to expenditures by land owners and operators when deemed necessary in the public interest to prevent serious permanent damage to soil and water resources.

**Scope:** The inventory will include two major types of estimates, namely (1) an inventory of land use, conservation problems, and acreage needing treatment; (2) an inventory of watershed project needs.

The inventory of land use, conservation problems, and acreage needing treatment will be developed for all lands (except Federal noncroplands) used or available for use for the production of food and fiber crops in each county in the United States and appropriate subdivisions of Territories. (Conservation needs estimates have been developed for most of the land under the jurisdiction of Federal agencies.) It will include lands of the following types of owners: (a) Private persons or corporations; (b) States, counties, or municipalities; (c) Indian (individuals or tribes); (d) corporations which are partly owned by the United States such as Production Credit Associations; (e) lands temporarily held by the United States or a corporation wholly owned by the United States which were not acquired or reserved for conservation purposes; and (f) cropland owned by the Federal Government and operated under lease or permit. County data for the inventory of land use, conservation problems, and acres needing treatment will be combined into State and National summaries. The inventory will be developed from basic data regarding: (1) Present acreage in major uses--cropland, pasture and range, forest and woodland, and other land, and (2) acreage of each land use on various kinds of soil, classified by degree of slope, erosion hazard, and other limiting factors.

<sup>2</sup> Tables 1, 2, and 3, respectively, show, estimated changes (between 1951-53 and 1975) in the nationwide acreages needed for production of various crops and of pasture forage total cropland by major types of use (1949 and 1951-53 and projection of estimated acreage to 1975) by agricultural regions, and pasture and grazing land (1950 and projections of estimated acreage to 1975) by agricultural regions.

<sup>3</sup> Future Domestic Requirements for Timber, by U. S. Dept. Agr. Forest Serv. Timber Resource Review. Chapter VI (Preliminary Review Draft). Washington, D. C. Oct. 1955.

<sup>4</sup> Table 4 is a tabulation of forest land acreage in the United States by regions as of 1952 with narrative pointing out there is no excess of forest land.



On the basis of these physical data, with due regard to the economic framework indicated previously as to the prospective future needs for products and services of land, the locally applicable technical information and experience and recommended standards and practices for conservation, and the development of soil, water, pasture and range, forest, recreation, and wildlife resources, estimates will be made indicating:

1. The present acreage in major land uses and the acreage of each land use on various kinds of soil.
2. The changes in land use that can be expected by 1975.
3. The acreages of land by kinds of problems and need for treatment, based on the expected uses in 1975, to provide the desired level of conservation. This estimate will exclude needs that have been met by January 1, 1958.

The inventory of watershed project needs will determine the nature and scope of water-management problems that if met would require watershed projects of a type and size that qualify for assistance under P. L. 566, as amended. All lands will be included without regard to the type of ownership. The data will be summarized by watershed-planning units for the States and the Nation.

**Organization and Cooperation:** The Department Soil and Water Conservation Needs Committee, comprised of one representative from each of the following agencies, has been established: Agricultural Conservation Program Service, Agricultural Marketing Service, Agricultural Research Service, Commodity Stabilization Service, Federal Extension Service, Farmers Home Administration, Forest Service, and Soil Conservation Service. This committee, under the leadership of a chairman from the Soil Conservation Service, will develop guiding policies and procedures, will furnish economic assumptions, and will make periodic reviews of progress and furnish guidance in the cooperative effort. The Forest Service will solicit the cooperation of State forestry agencies in discharging its responsibility for the adequacy of the physical data on forestry on non-Federally owned forest lands.

State and Territorial Soil and Water Conservation Needs Committees will be established. (Hereafter, these will be referred to as State Needs Committees.) Their membership will consist of representatives of each of the Department agencies noted above, including State Agricultural Stabilization and Conservation Committees. The Soil Conservation Service will invite representation on the committee from the State Agricultural Experiment Station, the State Extension Service, the State forestry agency, and from other agencies and groups who may be able to provide assistance and otherwise contribute to the inventory.

The inventory will be developed by a Needs Committee in each county with supervision, assistance, and coordination furnished by State and Department Committees.

The State Needs Committee will develop a plan for making the inventory and will submit it for review and approval by the Department Committee and the Assistant Secretary, Federal-State Relations. The plan should establish overall guidance, priorities, organization, and responsibilities for making the inventory in the counties, including procedures, standards, and criteria. It will include a basic economic framework applicable to the State. This should take into consideration the National basic economic framework contained here and conditions that prevail in the State. It will include statewide estimates of present major land uses and of expected land use in 1975.

**Revisions:** The goal for completion of the inventory is December 31, 1959. It is to be kept current; therefore, periodic review of the information and revision will be made as needed.

TABLE 1.--Average 1951-53 harvested acreages and harvested acreage needed to balance attainable production with projected requirements for specified farm products in 1975, United States

Crop	1951-53	1975 required <sup>1</sup>
Feed grains:	<i>Million acres</i>	<i>Million acres</i>
Corn, all.....	80.8	73.7
Grain sorghum.....	6.6	10.0
Other feed grains <sup>2</sup> .....	46.9	47.4
Hay, all:	74.3	88.7
Oil crops:		
Soybeans for beans <sup>3</sup> .....	14.2	18.0
Peanuts, picked and threshed.....	1.7	1.2
Flaxseed.....	3.9	3.5
Food grains:		
Wheat, all.....	66.7	49.0
Other food grains <sup>4</sup> .....	3.5	3.6
Other food crops <sup>5</sup> .....	3.1	2.8
Tobacco.....	1.7	2.1
Cotton.....	25.7	16.2
Total of specified crops.....	329.1	316.2
Cropland pasture.....	<sup>6</sup> 69.3	104.0
Total of specified crops and cropland pasture...	<sup>6</sup> <sup>7</sup> 398.4	<sup>7</sup> 420.2

<sup>1</sup> Projected production requirements in 1975 divided by estimates of yields attainable from known technology.

<sup>2</sup> Oats and barley.

<sup>3</sup> Assuming soybeans continue to be the chief source of high-protein feed.

<sup>4</sup> Rice and rye.

<sup>5</sup> Potatoes, sweetpotatoes, and dry beans.

<sup>6</sup> Cropland pasture acreage for 1949.

<sup>7</sup> Does not include harvested acreage of some minor crops. Also excludes acreages in crop failure, summer fallow, and cropland in soil-improvement crops and idle.

TABLE 2.--Total cropland in major types of use, acreage in 1947-49 and 1949, and projection of estimated acreage to 1975 by regions<sup>1</sup>

Region <sup>2</sup>	Cropland used for crops <sup>3</sup>		Cropland used only for pasture <sup>4</sup>		Cropland in soil-improvement crops and idle <sup>5</sup>		Total cropland <sup>6</sup>	
	1947-49	1975	1949	1975	1947-49	1975	1949	1975
	<i>Million acres</i>	<i>Million acres</i>	<i>Million acres</i>	<i>Million acres</i>	<i>Million acres</i>	<i>Million acres</i>	<i>Million acres</i>	<i>Million acres</i>
Northeastern.....	16	17	4	4	2	2	22	23
North Central:								
Corn Belt.....	78	81	15	14	3	4	96	99
Lake States.....	38	40	6	6	2	3	46	49
Northern Plains.....	91	94	4	5	6	4	101	103
Total.....	207	215	25	25	11	11	243	251
Southern:								
Appalachian.....	24	24	12	14	4	3	40	41
Southeastern.....	19	20	4	8	5	3	28	31
Mississippi Delta.....	16	19	6	7	2	2	24	28
Southern Plains.....	44	47	9	8	1	4	54	59
Total.....	103	110	31	37	12	12	146	159
Mountain.....	33	37	4	5	3	3	40	45
Pacific.....	20	24	5	4	2	2	27	30
Total for United States.....	379	403	69	75	30	30	478	508

<sup>1</sup> Projected acreage for 1975 as reported in U. S. Dept. Agr. Inf. Bul. 140, pp. 13, 25, and 50. The net projected acreage of new cropland and rotation pasture acreage is based on data concerning shifts in land use and new land-development programs from various public agencies engaged in land-development activities. Although the acreage for any one year may vary from the average, for working purposes it was assumed that there would be a uniform increase per year between 1947-49 and 1960 and from 1960 to 1975. The projection is made under the assumption that the 1935-54 rates of land development will continue to 1975. If there is a material change in the rate of development, there would, of course, be a change in the total acreage of cropland.

<sup>2</sup> Northeastern States: Connecticut, Maine., Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.

Central States: (1) Corn Belt States--Illinois, Indiana, Iowa, Missouri, Ohio.

(2) Lake States--Michigan, Minnesota, Wisconsin.

(3) Northern Plains States--Kansas, Nebraska, North Dakota, South Dakota.

Southern States: Appalachian States--Delaware, District of Columbia, Kentucky, Maryland, North Carolina, Tennessee, Virginia, West Virginia.

Southeastern States--Alabama, Florida, Georgia, South Carolina

Mississippi Delta States--Arkansas, Louisiana, Mississippi.

Southern Plains States--Oklahoma, Texas.

Mountain States: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming.

Pacific States: California, Oregon, Washington.

<sup>3</sup> Cropland harvested, crop failure, and summer fallow. In the base period 1947-49, a total of 379 million acres were used for cultivated crops, excluding rotation pasture and soil-improvement crops. The projected acreage of cropland used for cultivated crops in 1975 is 403 million acres, or an increase of 24 million over the 379 million acres used in 1947-49. In addition, the projected cropland acreage for 1975 includes 75 million acres of cropland used for pasture, and 30 million acres in soil-improvement crops and temporarily idle.

<sup>4</sup> Cropland used only for pasture during the year, including rotation pasture, but excluding aftermath or crop-residue pastures.

<sup>5</sup> Cropland in soil-improvement crops and cropland idle for the year.

<sup>6</sup> Total cropland available or sum of the cropland used for crops, cropland used for pasture, and cropland in soil-improvement crops and idle.



TABLE 3.--Pasture and grazing land, acreage in 1950, and projection of estimated acreage to 1975, by regions<sup>1</sup>

Region <sup>2</sup>	Open permanent pasture in farms <sup>3</sup>		Woodland pasture in farms		Total pasture in farms		Grazing land not in farms <sup>4</sup>		Total acreage of pastureland and grazing land <sup>5</sup>	
	1950	1975	1950	1975	1950	1975	1950	1975	1950	1975
Northeastern.....	7	8	4	4	11	12	3	2	14	14
North Central:										
Corn Belt.....	17	16	13	12	30	28	5	4	35	32
Lake States.....	6	8	10	9	16	17	6	5	22	22
Northern Plains.....	71	70	2	2	73	72	7	5	80	77
Total.....	94	94	25	23	119	117	18	14	137	131
Southern:										
Appalachian.....	9	12	8	9	17	21	12	11	29	32
Southeastern.....	7	9	17	17	24	26	25	25	49	51
Mississippi Delta.....	5	7	9	9	14	16	28	25	42	41
Southern Plains.....	85	82	36	30	121	112	16	15	137	127
Total.....	106	110	70	65	176	175	81	76	257	251
Mountain.....	180	175	24	22	204	197	227	225	431	422
Pacific.....	29	28	12	11	41	39	71	68	112	107
Total.....	416	415	135	125	551	540	400	385	951	925

<sup>1</sup> Projected acreage for 1975 as reported in U.S. Dept. Agr. Inf. Bul. 140, pp. 25 and 52.<sup>2</sup> See footnote 2, table 2.<sup>3</sup> Open permanent pasture, or grassland pasture in farms exclusive of cropland used for pasture or rotation pasture.<sup>4</sup> Grassland and woodland used for grazing not in farms.<sup>5</sup> Total pasture and grazing land in farms and not in farms, including grassland and woodland used for pasture, exclusive of cropland used for pasture.



TABLE 4.--Forest-land acreage in the United States by regions as of 1952

Region <sup>1</sup>	Forest land
	<i>Million acres</i>
Northeastern.....	63
North Central:	
Corn Belt.....	31
Lake States.....	55
Northern Plains.....	6
Total.....	92
Southern:	
Appalachian.....	73
Southeastern.....	80
Mississippi Delta.....	52
Southern Plains.....	48
Total.....	253
Mountain.....	143
Pacific.....	97
Total for United States.....	648

<sup>1</sup> See table 2, footnote 2.

Note: The Forest Service, in its recent Timber Resource Review, finds there is no excess of forest land. The situation and outlook is summed up as follows: "It would appear that in anticipation of probable increases in population, further urbanization, further development of our national highway system, and needs for agricultural land to meet food requirements, the long-term trend and pressure will be in the direction of less area for commercial forestry purposes. This probability, and the difficulties (even under anticipated progress in forestry) of meeting potential future demand for timber indicates that further significant withdrawals of commercial forest land for other uses should in general be avoided, or should be made with full realization that such withdrawals may adversely affect future timber supplies."

About 49 percent (301 million acres) of the total forest-land acreage is used for grazing by livestock. An estimated 121 million acres of grazed forest is in farms; the other 180 million acres is not in farms. In certain areas and for certain forest types, grazing has an adverse effect on timber growth and reproduction.

## PROCEDURE

### I. General Principles

All agencies of the Department interested in soil and water resources development will cooperate in making the inventory. This cooperative effort is approved by the Secretary on the basis that it will be carried out within existing budgets and organizations. Local and State agencies as well as other Federal agencies and voluntary groups concerned with conservation will also be invited to participate.

The inventory will consist of:

1. Inventory of land use, conservation problems, and acreage needing treatment.
2. Inventory of watershed project needs.

### II. Organization for State and County Work

The State Needs Committee will include representatives of the participating USDA Agencies including State ASC Committees. The State Agricultural Experiment Station, State Agricultural Extension Service, and the State Forestry Agency are to be invited to designate representatives. In consultation with this group, the State Conservationist, SCS, will invite other agencies, organizations, and groups interested in soil and water conservation to name representatives on the Committee.

The State Conservationist will be responsible for organizing the State Needs Committee.

County Needs Committees will include representatives of Federal, State, and local agencies or organizations concerned with soil, water, forest, range, and wildlife conservation in the county.

The representative of the Soil Conservation Service assigned to the county (or a member of the County Needs Committee designated in the State Plan) will be chairman of the County Needs Committee and responsible for organizing the work and completing the Conservation Needs Inventory in each county. The chairman will invite each agency or organization to designate a representative and will organize the Committee.

### III. Functions of the State Needs Committee

The State Needs Committee will be responsible for planning and supervising the development of the inventory for the counties of the State and for compiling State summaries. In discharging these responsibilities the State Needs Committee will:

- A. Prepare and submit to the Administrator, Soil Conservation Service, by December 1, 1957, for Departmental review, a State Plan, developed within the framework of the policy and procedures set forth in this statement and following the prescribed outline (see pp. 25 and 26) for carrying on the work; recognizing that:
  1. The Department in cooperation with State Experiment Stations has made detailed soil surveys covering large areas in various States,
  2. Both the Soil Conservation Service and Agricultural Conservation Program Service have developed estimates of conservation needs for some areas,
  3. The Forest Service has recently completed an intensive survey of the Nation's timber resources.
  4. Studies have been made on certain river basins and watersheds by Interagency Committees,
  5. Studies of land ownership and use have been made by Agricultural Research Service and State Agricultural Experiment Stations.

- B. Provide County Needs Committees with available physical data and watershed maps, and previous conservation needs estimates on soil, water, forest and woodland, and pasture and range resources, with instructions for the use of the information in making the inventory. The State Needs Committee will fill in section A of part I, form N-1, and also column b of part II, if data are available.

The Federal acreage to be entered may be from tables prepared by ARS and FS and distributed to State Needs Committees. If more up-to-date information is readily available locally it should be used. Federal lands to be excluded are: Those managed by the Forest Service, Bureau of Land Management, National Park Service, Bureau of Sports Fisheries and Wildlife, Bureau of Reclamation, Tennessee Valley Authority, Department of National Defense, and Atomic Energy Commission. These lands except Federal cropland will be excluded from the county inventories. In counties where there is Federal cropland the acreages should be obtained from the agencies managing such land so that there will be a firm basis for the expansion of sample data. For purposes of the inventory, Federal cropland includes only Federal cropland operated under lease or permit by private persons or organizations.

- C. Arrange for interchange of data on watersheds that cross State lines, and assume the primary responsibility for certain of these, as agreed between the States.
- D. Establish priorities of work by counties and supervise and periodically review progress and accomplishment in the development of county inventories.
- E. Develop standards and criteria for establishing comparability of estimates between counties and instruct County Needs Committees in their use. The State Needs Committee should identify areas having similar conditions within the State and encourage Needs Committees in adjacent counties to consult with each other.
- F. Approve additional subdivisions of major land uses to be used in preparing county inventories. These may be for use only in certain counties, or statewide.
- G. Review and compare county inventories for uniformity in method and comparability of results. If it is found that estimates developed are not on a comparable basis with other counties or that the procedures or the State Plan have not been adequately followed, revisions will be required.
- H. Compile summaries and submit them to the Administrator of the Soil Conservation Service for Department review and approval. The State summaries of data on forms N-1 and N-2, and N-3-1, N-3-2, N-3-3, and N-3-4 will be by counties, while those on form N-3-5 will be summarized by watersheds.

#### IV. Operations of County Needs Committees

- A. Determination of Land Use, Conservation Problems, and Acreage Needing Treatment

Inventory data will be developed for each county by the following steps:

Estimate present land use (form N-1).

Estimate probable land use by 1975 (form N-2).

Estimate the acreages of land having different kinds of problems and acres needing treatment to provide the desired level of soil and water conservation (forms N-3-1, N-3-2, N-3-3, and N-3-4).

Department representatives on the County Soil and Water Conservation Needs Committees may assist in estimating the kinds and amounts of practices and measures needed in the county if this is desired by a local group. Such efforts, however, will not be a part of the National Inventory of Soil and Water Conservation Needs.



Many of the determinations in the inventory will be based on soil survey data provided to the Committees by the Soil Conservation Service. Other basic information will come from the Forest Service, State forestry agencies, and other sources.

STEP 1. --Determining present land use acreages

The County Needs Committee will determine the present land use acreages. For this purpose form N-1, Land Use--Present and Expected Changes, is provided for State and county use for recording distribution of total land. In the following instructions for use of form N-1, the letters and numbers refer to letters and numbers of items on the form.

Part I A--This item will have been filled in by the State Needs Committee. The basic figure is the total land area of the county as given in the 1954 Census of Agriculture adjusted, if necessary, to exclude areas inundated by the construction of new reservoirs, lakes, or ponds since 1947. The acreage of Federal land (except cropland) in the county is entered as item A 1 and subtracted from the total land area.

B--This item will be filled in by the County Needs Committee. Data on urban and built-up areas will be taken from the soil survey. This figure should be compared with reliable data from other sources and adjusted, if necessary. The accepted figure will be entered as item B 1. The following publications may be useful as a reference point in some counties:

1. Land Area and Population of Incorporated Places of 2,500 or More. U. S. Bureau of Census, Series Geo. No. 5, April 1, 1950.
2. Population and Land Area of Urbanized Areas. U. S. Bureau of Census, Series P C - 9, No. 4, April 1, 1950.

Urban and built-up areas include cities, villages, other built-up areas of more than 10 acres, industrial sites; railroad yards; cemeteries; airports; golf courses; shooting ranges; etc.; and institutional and public administrative sites and similar types of areas. In counties where such acreages are significant, (1) the area devoted to roads and railroads will be included, and (2) the acreage of farmland inside city and village limits will be excluded.

The Census figure does not include the area of large bodies of water (more than 40 acres in extent), rivers more than 1/8 mile wide, and some other water areas. It does include the acreage of smaller ponds, lakes, and streams. This acreage will be determined from the soil surveys and entered as item B 2 in the table.

C--The inventory acreage is the residual acreage after deduction of items A 1 and B 1 and 2 from the total land area. This is the acreage for which the County Needs Committee will estimate land use adjustments.

Part II is for the use of the County Needs Committee in establishing basic data in land use.

Column (a).--This column shows the land groups (or uses) to be included in the National Inventory.

Additional subdivisions, as approved by the State Needs Committee, may be made where desired for State or county use. Such subdivisions will be additions to (not substitutions for) the printed items. The acreage entries for subdivisions will be shown in parentheses to avoid confusing with totals of major items 1, 2, 3, and 4. Totals of the acreage figures of additional subdivisions under a major land use need not equal the total figure for that land use.

The following are instructions and definitions that relate to the corresponding items in part II of form N-1:

1. Cropland.--Land currently tilled including cropland harvested, crop failure, summer fallow, idle cropland, cropland in cover crops or soil-improvement crops not harvested or pastured, rotation pasture, and cropland being prepared



State \_\_\_\_\_

County \_\_\_\_\_

## LAND USE--PRESENT AND EXPECTED CHANGES

## Part I

- A. Total land area of county (acres) \_\_\_\_\_  
 Less: 1. Federal land (except \_\_\_\_\_ acres cropland) \_\_\_\_\_
- B. Acreage for expansion of samples \_\_\_\_\_  
 Less: 1. Urban and built-up areas \_\_\_\_\_  
 Less: 2. Water areas (less than 40 acres in size) \_\_\_\_\_
- C. Inventory acreage \_\_\_\_\_

## Part II

Inventory land groups	Present acreage			Expected land use in 1975--acres (from N-2)
	Existing data	Expanded soil survey data	Adopted estimate	
(a)	(b)	(c)	(d)	(e)
1. Cropland	_____	_____	_____	_____
2. Pasture and range	_____	_____	_____	_____
3. Forest and woodland	_____	_____	_____	_____
a. In farms or operated for production of forest products	( _____ )	XXX	( _____ )	( _____ )
b. Other forest and woodland	( _____ )	XXX	( _____ )	( _____ )
4. Other land	_____	_____	_____	_____
a. In farms	( _____ )	XXX	( _____ )	( _____ )
b. Not in farms	( _____ )	XXX	( _____ )	( _____ )
5. Net change in inventory acreage (+ or -)	XXX	XXX	XXX	
6. Total--items 1 - 5				
7. Adjusted inventory acreage (Total - items 1 - 4)	XXX	XXX	XXX	

Column (d) Approved \_\_\_\_\_  
(Date)By \_\_\_\_\_  
(For State Needs Committee)Column (e) Approved \_\_\_\_\_  
(Date)By \_\_\_\_\_  
(For State Needs Committee)



for crops or newly seeded crops. Cropland includes all tame hay, and also wild hay harvested east of the Mississippi. It includes land in vegetables, fruits, and nuts including those grown on farms for home use.

2. Pasture and range. --Land in grass or other long-term forage growth that is used primarily for grazing. Pasture and range includes grassland, nonforested pasture, wild hay harvested in States west of the Mississippi, and other grazing land with the exception of pasture in the crop rotation. It may contain shade trees or scattered timber trees with less than 10-percent canopy, but the principal plant cover is such as to identify its use primarily as permanent grazing land.

In States or counties having extensive areas of rangeland, it will be desirable to separate pasture (primarily of introduced grasses) from range (or native grasses).

3. Forest and woodland. --(a) Lands which are at least 10 percent stocked by forest trees of any size and capable of producing timber or other wood products, or capable of exerting an influence on the water regime; (b) lands from which the trees described in (a) have been removed to less than 10-percent stocking and which have not been developed for other use; (c) afforested (planted) areas; and (d) chaparral areas.
  - a. In farms or operated for production of forest products. --Forest and woodland which is part of a farm, and all other forest and woodland which (1) is producing or physically capable of producing usable crops of wood, (2) economically available now or prospectively, and (3) not withdrawn from timber utilization.
  - b. Other forest and woodland. --Forest and woodland not a part of a farm, which is (1) withdrawn from timber utilization by public agencies, corporations, or private persons, or (2) incapable of yielding usable wood products because of adverse site conditions or so physically inaccessible as to be unavailable economically in the foreseeable future. This will include forest land set aside for special uses other than timber production, such as State parks, monuments, natural areas, and game preserves.
4. Other land. --Farmsteads and idle (as formerly mapped on the soil survey) wildlife areas and other areas not classified into cropland, pasture and range, forest and woodland, and built-up and urban areas.
  - a. In farms. --A farm as defined for the inventory is a unit of one or more tracts of land under one management, some portion of which normally is used for the production of field crops, pasture, or range other than for use of the producer's family. It includes forest and woodland or other land commonly considered as part of such a unit.
  - b. Not in farms.
5. Net change in inventory acreage (+ or -). --Where it is not estimated that additional land will be brought into the inventory acreage this entry will be the same as the entry in line B 5, column (g) of form N-2; it will be designated "+."

Where changes in land use are expected to bring land into the inventory acreage as discussed under step 2, this entry will be the net difference between the entries on lines B 5 and C, column (g), form N-2. If the entry in line B 5 is larger, the net change will be designated "+;" if the entry in line C is larger, the net change will be designated "-."

6. Total acreage. --Items 1 - 5. --In columns c, d, and e the sum of the entries not in parentheses of items 1, 2, 3, 4, and 5 must equal the inventory acreage (part I, item C).
7. Adjusted inventory acreage. --This is the land for which the County Needs Committee will estimate conservation needs. It will be determined by subtracting the figure entered in column (e) line 5, from part I, line (C). It should equal the total of items 1 - 4 (not in parentheses) column e.



Column (b). --For guidance of the County Needs Committee, the State Needs Committee will record data opposite those items in column (a) for which information is available. The source of the data will be indicated to the County Needs Committee. State Needs Committees have been furnished publications and other material which should be useful in obtaining this information.

Data on acreage of forest and woodland in various States are available from the Timber Resource Review prepared and published by the Forest Service. In some States, more recent forest survey information is available.

Where forest survey data are available for forest-land area in column (b), the adopted estimates in column (d) should differ only to the extent of known changes in land use.

There may be no data for entries in column (b) for subdivisions (a) and (b) of items 3 and 4.

Since the figures in column (b) may come from different sources the total of items 1 - 4 may not equal the inventory acreage (part I C). This difference must be recognized in any further use of the data.

Column (c). --The Soil Conservation Service will provide soil survey data showing the acreage of cropland, pasture and range, forest and woodland, and other land. Additional subdivisions of any land use such as the separation of irrigated cropland from dry cropland, or of pasture from range, may be made in a State or county as approved by the State Needs Committee.

Column (d). --The County Needs Committee after considering the figures in columns (b) and (c) will estimate the acreage which it believes most accurately represents the present acreage in each of the land uses in the county. These adopted acreage figures will be entered in column (d). The County Needs Committee will make estimates for subdivisions (a) and (b), items 3 and 4, using any available data plus knowledge of members of the Committee.

When column (d) is completed, the County Needs Committee will send form N-1 to the State Needs Committee for review and approval. If adjustments are necessary it will be returned to the County Need's Committee for needed revision.

After column (d) has been approved by the State Needs Committee the County Needs Committee will make estimates of land use adjustments, recording the estimates on form N-2. Column (e) form N-1 will be filled out from the summary of form N-2. All acreages entered in column (d) must be accounted for in column (e) so that the sum of the entries not in parentheses for items, 1, 2, 3, 4, and 5 in column (e) equals the inventory acreage. Item 7 will be the sum of items 1, 2, 3, and 4.

#### STEP 2. --Estimating probable land use changes by 1975

The County Needs Committee will estimate the changes in land use that are expected to occur in the county by 1975. Form N-2 will be used for making tables of these estimates. The estimate of changes in land use will take into consideration the physical capabilities of the land; present land use and trends in land use; expected demands on the land for agricultural, forest, and other products and services as reflected in the "economic framework;" and the need for farming systems that are economically feasible to farm owners and operators. However, the estimates must be realistic, and it must be recognized that all changes in land use considered desirable from the technical standpoint may not occur by 1975. Demands on the land for agricultural production and other purposes as well as size of farm unit and other factors may tend to keep some land out of the use now considered as the safest from the physical standpoint.

Estimates will include a figure for Federally owned land scheduled for transfer into private ownership by 1975, such as land developed and opened to entry by the Bureau of Reclamation.



## ESTIMATES OF EXPECTED CHANGES IN LAND USE BY 1975

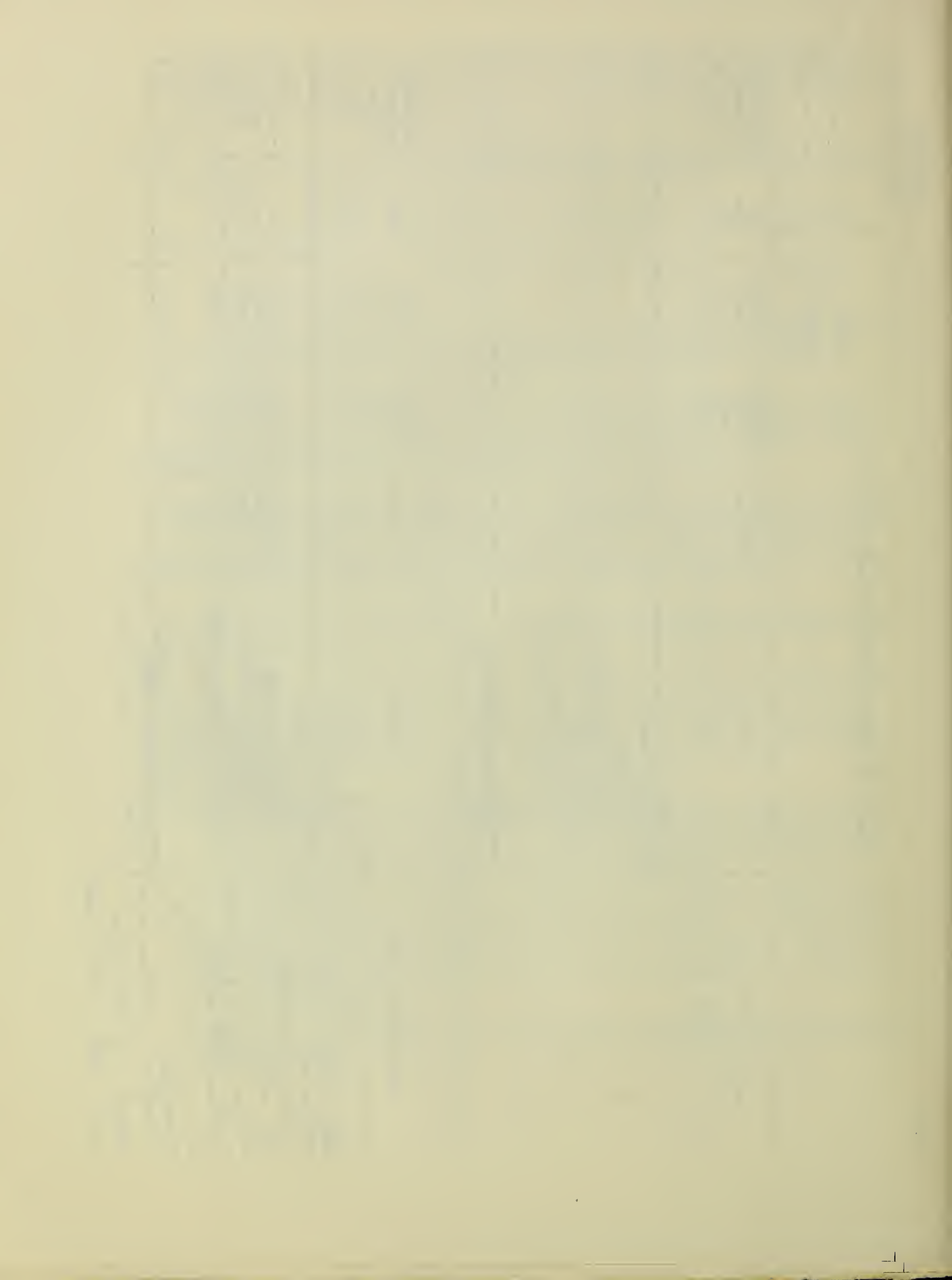
State \_\_\_\_\_  
County \_\_\_\_\_  
Date \_\_\_\_\_

Land-capability unit	Land use	Cropland	Pasture and range	Forest and woodland	Other	Expected acreage totals
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	A. Present land use					
	B. Expected changes					
	1. Cropland					
	2. Pasture and range					
	3. Forest and woodland					
	4. Other land					
	5. Out of inventory acreage					
	a. Urban and built-up	( )	( )	( )	( )	( )
	b.	( )	( )	( )	( )	( )
	c.	( )	( )	( )	( )	( )
	C. Into inventory acreage from-					

- Sample -

Land-capability unit	Land use	Cropland	Pasture and range	Forest and woodland	Other	Expected acreage totals
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	A. Present land use	5,000	2,000	7,000	1,000	15,000
	B. Expected changes					
	1. Cropland	3,500	400	300		4,200
	2. Pasture and range	700	1,000	300		2,000
	3. Forest and woodland	500	1,500	6,000	400	7,500
	4. Other land				500	500
	5. Out of inventory acreage	300	100	400	100	700
	a. Urban and built-up	( 200 )	( 100 )	( )	( 100 )	( 300 )
	b. Water	( 100 )	( )	( 400 )	( )	( 200 )
	c. Federal lands	( )	( )	( )	( )	( 200 )
	C. Into inventory acreage from -					

We 5- deep, well drained, non-stony, silt loam moderately sloping, moderately eroded the major problem is erosion requiring intensive treatment for control. There is no secondary problem (List several dominant soils if known and well established)



- a. Land-capability units. --The estimates are to be made by land-capability units. A land-capability unit is a group of soils that are nearly alike in potential for agricultural use, plant growth, and response to similar treatment and management. In the system of classification, the soils are grouped into land-capability classes according to the intensity of the problem. These classes are divided into subclasses by types of dominant problems, and into units by differences that cause secondary problems or require different kinds of treatment.

These steps in classification are reflected in the symbol of the land-capability unit, with a Roman numeral indicating the class, a lowercase letter for the subclass, and an Arabic numeral for the unit, for example IIIe5.

Each land-capability unit will be described in sufficient detail to identify the kind of land and the kind and degree of its dominant and secondary problems. The description for each capability unit should indicate the nature of soil, slope, and erosion conditions, water conditions, surface obstacles, salinity, acidity, and fertility when these are limiting factors. The names of some of the dominant soils may be listed if known and well established. In the land-capability unit symbol the major problems are indicated by lowercase letter, i. e., erosion by (e), excess water by (w), unfavorable soil conditions by (s), and adverse climatic conditions by (c). Secondary problems are not indicated by the land-capability symbol and will have to be recognized by interpreting the soil conditions. This identification of the kind of land and problems needing treatment will be used in estimating land use changes.

- b. Land-resource units. --In some counties, estimates will be more accurate if made by land-resource units and then added together to give county totals. A land-resource unit is a geographic area of land, at least several thousand acres in extent, characterized by a particular combination or pattern of soils (including slope and erosion), climate, water resources, land use, and types of farming. Such a unit may occur in one continuous area or in segments.

Form N-2 will be used for making tables of the estimates. Modifications of form N-2 to permit subdivisions of land uses may be made in counties where approval is given by the State Needs Committee. (If the estimates are made by land-resource units the same form will be used.) A separate block will be used for each land-capability unit. In the space in column (a), show the identification symbol and a description of the land-capability unit in sufficient detail to distinguish the kind of land and to identify the dominant and secondary problems on it. Land-capability units will be arranged by classes and subclasses.

The land uses to be considered are shown in the lines under the heading "expected changes" in column (b), and at the top of succeeding columns.

The figures to be entered in line A will come from the soil survey data for the county. When the figure for any land use as agreed upon by the County Needs Committee and shown in column (d), form N-1, does not agree with that of the soil survey data for that land use, the estimated land use changes will be derived from soil survey figures revised by the following procedure. The figure for a land use in column (d), form N-1, will be divided by the corresponding figure from the soil survey to obtain a factor. The acreage of each land-capability unit within that land use as obtained by the soil survey will be multiplied by this factor and the result entered in the space in line A, form N-2, for that land-capability unit and land use. The revised figures obtained by this method will be used as the basis for estimating land use changes according to the method outlined as follows. The breakdowns of each present land use by land-capability units must total the figure shown in column (d), form N-1.

Lines B 1 through 5 will be used to record expected changes in land use. The total of the figures in items B 1 through 5 in each column, must equal the present land use figure in line A. The total of the figures in each line, from left to right, under B will be the estimated new acreage for each land use where no land has been added into the inventory.

Record the details of the estimates of adjustments out of the inventory acreage in line B 5 and following lines. This may include expansion of urban development, programs of known



land acquisition by public agencies including highway development, or known plans for the permanent inundation of land by the building of reservoirs.

In a few counties there is Federally owned land that is definitely scheduled for transfer into private ownership by 1975. In these counties, the estimates for such land will be recorded in line C--"Into inventory acreage from (Name Federal agency such as Bureau of Reclamation or Bureau of Land Management)." The acreages of expected land uses will be shown under columns c through g. In developing total figures for each land use, the figure in line C, column c, must be added to the figure in line B 1, column g, line C, column d to line B 2 column g, etc. These combined figures will be the ones entered in column (e), form N-1. The total figure in column g will be used in calculating the net changes in inventory acreage on form N-1.

In the example, column (c) shows that there are 5,000 acres of cropland in land-capability unit IIIe5. It is expected that 3,500 acres of this will remain in cropland. Similarly it is estimated that 700 acres now in crops will go to pasture, 500 acres will go to forest and woodland, 200 acres will be developed for urban and built-up areas, and 100 acres will be inundated. These estimates are recorded in the appropriate lines in column (c). The acreage in other uses as shown in succeeding columns is handled in the same manner. This same process will be followed for each land-capability unit.

After estimates are completed for a land-capability subclass, one block will be used for recording totals for the subclass. Similar totals will be developed for each land-capability class and for groups of classes I - IV, and V - VII. A final block will show the total for all land in the inventory acreage and these data will be recorded in column (e), form N-1.

After the table has been completed, estimates will be made of acreages for subdivisions (a) and (b), items 3 and 4, form N-1, on the basis of expected 1975 acreage for these uses and recorded on form N-1, column (e). Tables on forms N-1 and N-2 will then be sent to the State Needs Committee for review.

#### STEP 3.--Estimating conservation needs

Conservation needs will be estimated in terms of conservation problems and acres needing treatment.

Conservation needs for cropland, other land, pasture and range, and forest and woodland will be estimated in terms of acres of each land use having different types of problems. The adjusted land use figures from form N-2 will be used in making the estimates. Forms N-3-1, N-3-2, N-3-3, and N-3-4 will be used for recording these estimates. Form N-3-1 will be used for recording estimates for cropland and form N-3-4 for other land. The problems for these land uses are related primarily to the conservation of the soil resource. Therefore, land-capability units, singly or in groups, will form the basis for making the estimates. Since the problems on pasture and range, and forest and woodland are related to the conservation of the plant cover as well as to the conservation of the soil resource, the estimates will be made with no direct reference to land-capability units. Form N-3-2 will be used for recording the estimates of conservation needs of pasture and range, and form N-3-3 will be used for recording the estimates for forest and woodland.

The estimates of expected changes in land use by 1975 may indicate that some acreage of land will remain in its present use, while the use will have been changed on other areas. In the acreage where the use will not be changed, the estimates of acreages with problems need-



## ESTIMATE OF NEEDS FOR CONSERVATION TREATMENT ON EXPECTED CROPLAND ACREAGE, 1975

State \_\_\_\_\_

County \_\_\_\_\_

Total acres of cropland \_\_\_\_\_

Date \_\_\_\_\_

Type of problem	Total acres	Acres adequately treated or treatment not feasible	Acres needing treatment and feasible to treat
(a)	(b)	(c)	(d)
A. Land with no problems that limit use.		XXXX	XXXX
B. Land on which the dominant problem is erosion by water or wind or both:			
1. Land having no serious secondary problem.			
2. Land having a secondary problem of excess water.			
3. Land having secondary problems caused by unfavorable soil conditions.			
4. Land having secondary problems caused by adverse climatic conditions.			
C. Land on which the dominant problem is excess water:			
1. Land having no serious secondary problems.			
2. Land having secondary problems of erosion by water or wind.			
3. Land having secondary problems caused by unfavorable soil conditions.			
4. Land having secondary problems caused by adverse climatic conditions.			

## ESTIMATE OF NEEDS FOR CONSERVATION TREATMENT ON EXPECTED CROPLAND ACREAGE, 1975--Continued

Type of problem	Total acres	Acres adequately treated or treatment not feasible	Acres needing treatment and feasible to treat
(a)	(b)	(c)	(d)
D. Land on which the dominant problems are caused by unfavorable soil conditions:			
1. Land having no serious secondary problem.			
2. Land having secondary problems of erosion by water or wind.			
3. Land having a secondary problem of excess water.			
4. Land having secondary problems caused by adverse climatic conditions.			
E. Land on which the dominant problems are caused by climatic conditions:			
1. Land having no serious secondary problem.			
2. Land having secondary problems of erosion by water or wind.			
3. Land having a secondary problem of excess water.			
4. Land having secondary problems caused by unfavorable soil conditions.			
County Totals (Lines A, B, C, D, E)			

ing treatment will be based on the present condition of the land or of the vegetative cover, not on anticipated land and cover conditions in 1975. Accordingly these estimates will be made on the basis of conditions January 1, 1958, which are feasible to treat. If the acreage of changed use remains in inventory acreage, the estimates of conservation needs will include consideration of the problems resulting from the change, i. e., if land is to go from pasture to forest and woodland, a tree cover must be established.

a. Instructions for estimating needs for conservation treatment on expected cropland acreage, 1975, form N-3-1. --On cropland, problems to be considered are the hazards or limitations in land use, crop adaptation, plant growth, or in tillage, planting, and harvesting operations because of:

- Water or wind erosion that has occurred or will likely occur under expected use;
- Excess water caused by a high water table or by temporary flooding that prevents or limits use of conservation farming systems;
- Unfavorable soil conditions such as salinity, alkalinity, acidity, low fertility, stoniness, shallowness to rock or some other condition that limits root development, or low moisture-holding capacity;
- Adverse climatic conditions--extremes, in either precipitation or temperature or both.

On some land, none of the conditions are serious enough to impose limits or hazards, but most of the land has one or more of the problems. Any of these problems may be dominant. The dominant problem may occur alone or may be accompanied by one of the others.

The estimates of needs for conservation treatment on cropland will be based on the expected 1975 acreage of cropland by land-capability units shown in form N-2. The land-capability units will be grouped according to the dominant problems, with subgroups indicating secondary problems. It is probable that few, if any counties will have all of the combinations of problems shown on form N-3-1.

Land with no problems that limit use--This is Class I land without special potential or actual conservation problems except those related to the restoration and maintenance of fertility and tilth which may be solved by the methods generally recommended and used in the community. Enter the acreage figure for this land in line A, column (b).

Land on which the dominant problem is water or wind erosion or both. --This will include all land-capability units which are classified as having an erosion hazard as the dominant problem (IIe through VIIIe). The acreage for 1975 estimates of cropland on all of these land-capability units will be totaled and the figure entered in line B, column (b), form N-3-1.

In counties where available information provides a separation of acres subject to wind erosion from those subject to water erosion, the separation may be maintained in the County Needs Inventory, but will not be required in the National Summary.



Land having erosion as the dominant problem may have secondary problems. Where such conditions exist it will be necessary to separate the acreage of those land-capability units on which erosion is the only problem from others on which the dominant erosion problem is accompanied by secondary problems of excess water, unfavorable soil conditions, or adverse climatic conditions. Since these capability units can be recognized from the descriptions in column (a), form N-2, those having similar types of problems will be grouped together and the total acreage of each group will be recorded in column (b), form N-3-1. Line B 1 will show the figures for land having only the erosion problem. Line B 2 is for the land on which erosion is the dominant problem, but which has a secondary problem caused by excess water. Line B 3 is for land having a dominant erosion problem with secondary problems from unfavorable soil conditions, and line B 4 will show any acreage having a dominant erosion problem with secondary climatic problems.

In making these groupings, the degree of hazard or limitation in use will not be considered, so such a group may contain capability units from several capability classes. For example, a group might include capability units IIe1, IIIe1, IIIe7, IVe5, and VIIe2. The symbols for each individual capability unit within a problem group will be recorded in column (a) on the form. Acreage must not be duplicated in making this division, so the sum of figures in column (b) of items B 1, B 2, B 3, B 4 must equal the entry on line B.

The same procedure will be followed for grouping the acreage under the other dominant problems of excess water, unfavorable soil conditions, and adverse climatic conditions.

After recording in column (b) the total acreage of each problem occurring in the county, estimate the acres that have been adequately treated for the particular problem or on which treatment is not economically feasible, using information in SCS and ASC records and any other available information. Record this estimate in column (c). Enter in column (d) the difference between the entries in columns (b) and (c). This is the acreage needing treatment. The figure in columns (b), (c), and (d) for each of the major items B, C, D, and E will be the totals of the subdivisions under that heading. The sum of items A, B, C, D, and E in column (b) must equal the total acreage of cropland.

- b. Instructions for estimating needs for conservation treatment on expected pasture and range acreage, 1975, form N-3-2. --The conservation needs on pasture and range land will be expressed in terms of acres needing treatment for conservation problems related to the establishment and maintenance of cover. Form N-3-2 will be used for recording the estimates of acres needing treatment. This form permits the recording of data separately for pasture and range in those counties in which the County Needs Committee feels that the separation is desirable.

Conservation needs estimates will be based on the "expected acreage" of pasture and range recorded in column (e), form N-1. This figure will be entered on line A.

Then estimate and enter in line B the acreage not needing treatment or on which treatment is not feasible. The area needing treatment will be the difference between these two figures and will be entered on line C. This is the acreage on which conservation needs will be estimated by problems.

In recording the data on types of problems, items 1 and 2 do not overlap; i. e.; acreage under one of the items should not be included in the other. However, acreages in items 3 or 4 may duplicate some of the acreage in any of the other items.

- Line 1. Establishment or reestablishment of vegetation. --Enter the acreage adjusted into pasture and range from other land uses plus any acreage of present pasture or range that has such poor vegetation that it needs to be completely reestablished.

## ESTIMATES OF NEEDS FOR CONSERVATION TREATMENT ON EXPECTED ACREAGE OF PASTURE AND RANGE, 1975

State \_\_\_\_\_

County \_\_\_\_\_

Date \_\_\_\_\_

Item	Pasture	Range	Total (b and c)
(a)	(b)	(c)	(d)
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
A. Total pasture and range area.	_____	_____	_____
B. Area not needing treatment or not feasible to treat.	_____	_____	_____
C. Area needing treatment.	_____	_____	_____
D. Type of problem and area affected:			
1. Establishment or reestablishment of vegetation.	_____	_____	_____
2. Improvement of vegetative cover.	_____	_____	_____
3. Protection of vegetative cover from:			
a. overgrazing	_____	_____	_____
b. fire	_____	_____	_____
c. erosion	_____	_____	_____
d. rodents	_____	_____	_____
e. encroachment of woody and noxious plants	_____	_____	_____
4. Water management:			
a. excess water	_____	_____	_____
b. water conservation	_____	_____	_____





Line 2. Improvement of vegetative cover. --Enter the acreage in which vegetative cover is inadequate but can be improved by the addition of minerals, partial seeding, and natural thickening of stand by deferred grazing or mechanical measures.

Line 3. Protection of vegetative cover. --Enter the acreage needing one or more types of protection listed in (a) through (e) below:

- a. Overgrazing. --Enter only the acreage which is in an overgrazed condition that can be corrected by the management of livestock or installation of watering facilities to protect the vegetative cover from deterioration.
- b. Fire. --Enter the acreage with serious fire hazards, but not now protected adequately on which this condition can be corrected by installation of fire-control measures.
- c. Erosion. --Enter the acreage of gullied and other seriously washed or wind-blown areas on which control measures are needed to prevent further deterioration.
- d. Rodents. --Enter the acreage with serious rodent damage that can be corrected by chemical, mechanical, or other measures.
- e. Encroachment of woody and noxious plants. --Enter the acreage on which the encroachment of woody and noxious plants has destroyed or threatens the grass cover that can be protected by chemical or mechanical measures.

Line 4. Water management. --Enter the total acreage having one or both of the problems listed below:

- a. Excess water. --Enter the acreage on which excess water prevents the adequate establishment, maintenance, and use of desirable vegetative cover.
- b. Water conservation. --Enter the acreage on which desirable vegetative cover can be feasibly established or improved by water-conserving measures.
- c. Instructions for estimating needs for conservation treatments on expected forest and woodland acreage, 1975, form N-3-3. --The conservation needs on forest land will be expressed in terms of broad conservation problems associated with the development and management of the forest and soil resources. In each county in which the inventory is developed an estimate will be prepared showing the acreage of forest land which falls into the "problems" as listed on form N-3-3.

Forest land: (1) Withdrawn from timber utilization or (2) incapable of yielding usable wood products because of adverse site conditions or so physically inaccessible as to be unavailable economically in the foreseeable future, should not be considered in estimating conservation needs except for measures necessary for the protection of such areas for watershed, wildlife, or recreation or for the protection of adjacent productive forest and woodland.

Most counties with forest land will have an acreage needing treatment in each of the numbered "problems" 1 through 4. In some counties there will be needs under "problems" 5 and 6.

The acreage on which the conservation needs will be estimated is the expected forest and woodland acreage figure as shown for item 3 in column (e), form N-1. The subdivisions of forest and woodland acreage that appear on form N-1 are for use in a later analysis of inventory data. Conservation needs will not be estimated separately for these subdivisions.

The estimate of conservation needs will be based on the forest-land acreage that is expected. This acreage will include areas of present cropland, pasture and range, and other land which it is expected will be converted into forest land. Likewise, some forest land will be converted to cropland, pasture and range, urban and built-up areas, and other nonforest uses.

Areas of cropland, pasture and range, and other land which are to be converted to forest land must first of all be reforested and must be included in the acreage on line 1, "establishment and reinforcement of timber stand." In addition, this same area might also be included in "protection of timber stand from: a. fire" and in some cases in "protection of timber stand from: c. animals including rodents." Thus, the same acre of forest land may be included in more than one "problem." Do not, however, compound problem acreages where the needs do not now exist. As an example, do not include under "establishment and reinforcement of timber stand" areas merely because they might be denuded by fires that may occur in the future.

#### 1. Establishment and reinforcement of timber stand

Report on line 1, form N-3-3, the acreage producing timber below its potential and on which it is considered feasible to bring the stand up to adequate stocking through application of the forestation measures described below. Exclude the areas to be planted for erosion control, reported under item 4.

Density or degree of stocking on forest land indicates to what extent growing space is being occupied by present or potential sawtimber or pole timber trees. Well and medium stocked stands are 40 percent or more stocked in relation to full stocking for comparable sites and stands; poorly stocked stands are 10 to 40 percent stocked; nonstocked areas are less than 10 percent stocked. Nonstocked areas, poorly stocked stands, and even medium stocked stands (40 to 70 percent stocked) are producing timber considerably below their potential. On these areas this means that effective use is not being made of the land devoted to forest production.

Forest land inadequately stocked with merchantable tree species can be satisfactorily stocked by planting seed, seedlings, or cuttings of desirable species or by preparation of the soil or forest floor to enhance natural establishment where there are adequate seed trees.

#### 2. Improvement of timber stand

Report in line 2 the acreage of forest land on which stand-improvement measures would be recommended as feasible under good forest management.

Once started, a forest will grow faster and produce better quality timber if the owner helps it along. This means keeping the stand neither too thick nor too thin, taking out cull and weed trees, pruning crop trees, and releasing desirable trees from competing undesirable vegetation. These and similar forestry practices are commonly referred to as stand-improvement measures.

It is essential that forest areas in need of improvement cutting be treated as a means of increasing the potential supply of timber products to meet future needs. Since forest stands and sites vary widely, improvement cuttings must be varied accordingly. It is important to recognize that although nearly every stand can benefit from improvement cuttings, their application may not be practicable because of the cost. Precommercial thinnings, cull removal, pruning, and release cuttings remove trees that are generally unmarketable, therefore, there is little opportunity for the landowner to retrieve any of the cost at the time of cutting. In such cases the owner is making an investment for the future.

In other improvement cuttings, such as thinnings made later in the life of the stand, many of the trees are large enough to be marketable. Trees removed in improvement cuttings that are of inferior species or poor form or with defects caused by insects and disease are usually large enough to be sold. Thus in these cases, the cutting may result in income to the owner.

ESTIMATE OF NEEDS FOR CONSERVATION TREATMENT ON EXPECTED ACREAGE OF  
FOREST AND WOODLAND, 1975

State \_\_\_\_\_

County \_\_\_\_\_

Date \_\_\_\_\_

A. Total area. \_\_\_\_\_ Acres

B. Description of problem: Acres needing treatment1. Establishment and reinforcement  
of timber stand. \_\_\_\_\_

2. Improvement of timber stand. \_\_\_\_\_

3. Protection of timber stand from:

a. Fire \_\_\_\_\_

b. Insects and disease \_\_\_\_\_

c. Animals including rodents \_\_\_\_\_

4. Erosion control. \_\_\_\_\_

5. Establishment of shelterbelts  
and windbreaks. \_\_\_\_\_

6. Improved naval stores methods. \_\_\_\_\_



50

1870-1871

1872-1873

1874-1875

1876-1877

1878-1879

1880-1881

1882-1883

1884-1885

1886-1887

1888-1889

1890-1891

1892-1893

1894-1895

1896-1897

### 3. Protection of timber stand from:

- a. Fire--Report on line 3a, the acreage of forest land which is not receiving protection adequate to meet the fire situation in the worst years and under critical conditions. In States having a State fire-control organization, information on the acres in the county not receiving adequate fire protection will be furnished by the State forestry agency representative on the State Needs Committee.

Control of fires is essential if future demands for timber products are met and soil erosion is to be controlled. In view of the characteristically heavy losses that occur during emergency fire periods, it is obvious that if fire damage is to be held to a minimum, protection must be adequate to meet successfully the critical situation of fire danger and numbers of fires that are typically encountered in a given area or locality. The goal in forest-fire protection is to provide adequate fire protection to all forest land. The success of a fire-control program depends on the existence and ability of a fire-control organization to meet critical situations.

The Timber Resource Review<sup>1</sup> estimated that whereas 81 percent of privately owned forest land was under protection, only 12 percent is receiving protection adequate to meet situations in the worst years and under critical conditions. Likewise, of the 93 percent of State, county, and municipally owned forest land under protection, only 34 percent is receiving adequate protection. Thus protection for most of the area was adequate to meet fire situations only in average or easy years and failures are frequent in average years and under critical conditions.

The privately owned portion unprotected is located principally in the Central Plains, west Gulf, and Southern Rocky Mountain areas; and the State, county, and Municipal portion is located in the Plains, Northern Rocky Mountain, and Southern Rocky Mountain areas.

- b. Insects and disease--Report on line 3 b the acreage of forest land not included in an effective program of protection from insect and disease outbreaks. Normally where an insect and disease protection program is in effect, it is coordinated by the State forestry organization. Where such is the case, the State forestry representative on the State Needs Committees will provide data on the area needing protection.

Because of the unpredictable nature of insect and disease outbreaks it is essential that all forest land be continuously observed so that prompt control measures can be taken. An effective program provides for periodic detection surveys and provisions for initiating control measures, where feasible, after the insect or disease outbreak has been discovered. The importance of detection surveys has been recognized by State and private timber owners, and in many parts of the country, forest pest control action councils have been organized to encourage adequate surveys and the participation of private timber owners in control work.

- c. Animals--including rodents--Report on line 3 c the acreage of forest land not now receiving adequate protection from animals, including rodents, and on which protection is considered feasible and practical under good forest management.

Many kinds of wildlife, as well as domestic animals prevent successful regeneration of some timber stands and can result in serious timber losses and soil erosion.

Domestic animals can usually be denied access to forest areas by fencing.

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<sup>1</sup> Timber Resources Review, Chapter IX A " Summary of Basic Statistics, " table 16. (Preliminary Review Draft Subject to Revision). Sept. 1955.

Where wildlife and rodents are causing damage, direct control methods such as trapping, snaring, shooting, and the use of poisons and repellents have been effective. In some cases the only feasible means of controlling forest damage is through game management.

4. Erosion control

Report on line 4, the acreage of forest land on which it is feasible to install erosion and water-disposal measures necessary to check gullies, control sheet erosion, stabilize dunes and blowouts, contain slides or slide areas, and control logging road and skid trail erosion.

Include here also the area of gullied and other eroded land (estimated by the County Needs Committee to be converted into forest land from cropland, pasture and range, and other land) which should be planted to trees as a means of controlling erosion and making productive use of the land for timber crops.

The area needing shelterbelts and windbreaks will not be reported here.

5. Establishment of shelterbelts and windbreaks

Report on line 5 the acreage on which it is feasible to establish shelterbelts and windbreaks. Do not include the area of shelterbelts and windbreaks already established and considered adequate. Trees and shrubs planted in groups or belts influence wind currents and thus reduce soil blowing, control snowdrifting, conserve moisture, and protect buildings, fields, gardens, and feed lots.

Where estimates of needed shelterbelts will be prepared, the conversion factor for reporting acreage will need to be developed locally. The recommended width of shelterbelts may vary from State to State. In States recommending a 66-foot strip, the converting factor would be 8 acres per mile of shelterbelt needed. Where a 33-foot shelterbelt is recommended, the converting factor would be 4 acres per mile of shelterbelt needed.

6. Improved naval stores methods

Estimate and enter on line 6 the acreage of forest land expected to be operated for naval stores production in 1975 which will need to be operated under improved naval stores methods.

- d. Instructions for estimating needs for conservation treatments on expected acreage of forest and woodland grazed. --In counties having substantial acreages classified as forest and woodland which are expected to be used for both forest and woodland and pasture and range in 1975, estimates of the acreages of this land having pasture or range problems that need treatment will be made on a separate form N-3-2. Add to the top of the form "Forest and Woodland Grazed."

The total acreage of such land will be entered on line A, column d, of this additional form N-3-2. The acreage to be considered will be limited to that part of the acreage shown on form N-1 in line 3 a, in column e, which is expected to be grazed. No estimates will be made for items 3 b, 3 c, and 3 d since these problems will have been considered for this same acreage and estimates of needs recorded on form N-3-3 for forest and woodland.

- e. Instructions for estimating needs for conservation treatments on expected acreage of other land 1975, form N-3-4. --Entries for columns (b), (c), and (d) of form N-3-4 will be estimated in the same manner as described for those columns on form N-3-1 (see pp. 15 and 16). Note: In estimating entries for column (c), "Acres adequately treated or treatment not feasible," it should be noted that (1) "other land" will not be subject to problems that accompany tillage, (2) some of the acreage will be of such low potential for productive use that treatment may not be economically feasible, and (3) problems on "other land" affecting nearby cropland, pasture and range, or forest and woodland will have been considered in the



## ESTIMATE OF NEEDS FOR CONSERVATION TREATMENT ON EXPECTED ACREAGE OF OTHER LAND, 1975

State \_\_\_\_\_

County \_\_\_\_\_

Total acres of other land \_\_\_\_\_

Date \_\_\_\_\_

Type of problem	Total acres	Acres adequately treated or treatment not feasible	Acres needing treatment and feasible to treat	Acres needing treatment in farms
(a)	(b)	(c)	(d)	(e)
A. Land with no problems that limit use.		XXX	XXX	XXX
B. Land on which the dominant problem is erosion by water or wind or both:				
1. Land having no serious secondary problem.				
2. Land having a secondary problem of excess water.				
3. Land having secondary problems caused by un- favorable soil conditions.				
4. Land having secondary problems caused by adverse climatic conditions.				
C. Land on which the dominant problem is excess water:				
1. Land having no serious secondary problems.				
2. Land having secondary problems of erosion by water or wind.				
3. Land having secondary problems caused by un- favorable soil conditions.				
4. Land having secondary problems caused by adverse climatic conditions.				

ESTIMATE OF NEEDS FOR CONSERVATION TREATMENT ON EXPECTED ACREAGE OF OTHER LAND,  
1975--Continued

Type of problem	Total acres	Acres adequately treated or treatment not feasible	Acres needing treatment and feasible to treat	Acres needing treatment in farms
(a)	(b)	(c)	(d)	(e)
D. Land on which the dominant problems are caused by un- favorable soil conditions:				
1. Land having no serious secondary problem.				
2. Land having secondary problems of erosion by water or wind.				
3. Land having a secondary problem of excess water.				
4. Land having secondary problems caused by adverse climatic conditions.				
E. Land on which the dominant problems are caused by climatic conditions:				
1. Land having no serious secondary problem.				
2. Land having secondary problems of erosion by water and wind.				
3. Land having a secondary problem of excess water.				
4. Land having secondary problems caused by un- favorable soil conditions.				
County Totals (Lines A, B, C, D, E)				

estimates on forms N-1-2 and 3. Entries will be made in column (e) to indicate the committee's estimate for each problem of other land needing treatment that is "in farms."

#### B. Instructions for Estimating Watershed Project Needs (form N-3-5)

Certain types of soil and water conservation needs cannot be adequately solved by local people, except by their action through local units of government such as soil conservation districts, watershed districts, drainage districts, irrigation districts, counties, and towns or municipalities. Aid from State and Federal agencies may also be needed. These conservation needs are primarily forms of water management, such as (1) flood prevention, (2) agricultural water management, (3) nonagricultural water management.

Public Law 566, as amended, the Watershed Protection and Flood Prevention Act, makes it possible to meet most of these soil and water conservation needs that cannot be met under other programs of assistance to agriculture or through Federal public works projects on major rivers, planned and constructed by such agencies as the Corps of Engineers or Bureau of Reclamation.

The Department of Agriculture administers this law which provides a means by which local organizations can apply for and obtain assistance in the planning and installation of works of improvement for flood prevention and the conservation, development, utilization, and disposal of water in watershed areas not exceeding 250,000 acres in size.

The kind of problems that can be met through this Act are described in U. S. Dept. Agr. PA-298, Facts About the Watershed Protection and Flood Prevention Act. The County Needs Committee should become familiar with the information in this publication.

This part of the inventory will give the nature and scope of the water-management problems that can be met by the assistance possible through this Act but will not give an evaluation of the economic feasibility of the projects. It will provide for State and national estimates of (1) the number of small watersheds or planning units (250,000 acres or less) on which the water-management problems cannot be solved without installation of larger structural measures for water management; (2) the extent or magnitude of the need for each development, and (3) the types of water-management problem requiring project action associated with each of the natural planning units, including: (a) flood prevention including floodwater and sediment-damage reduction and erosion-damage reduction; (b) agricultural water management including drainage, irrigation, and other agricultural water developments; and (c) nonagricultural water management including municipal or industrial water supply, recreation, and other nonagricultural water developments. Nonagricultural water problems, such as municipal and industrial water supply or recreation and fish and wildlife, will be considered only when they are interrelated with flood prevention and agricultural water management needs in multiple purpose improvements.

A watershed or planning unit consists of any watershed or combination of watersheds of less than 250,000 acres in aggregate size which has a flood-prevention or agricultural water-management problem of sufficient magnitude to require project action. A map showing the outlines of watersheds will be provided by the State Needs Committee, as stated on page 9.

Estimates will be recorded on form N-3-5, using a separate form for each watershed or planning unit that requires project type action to meet a watershed problem. The County Needs Committee will compile three types of data for each problem in the watershed, namely (1) total acreage having the problem, (2) acreage needing project action, and (3) number of farms or operating units affected.

Watershed-project problems, column (a). -- The items listed in column (a) are considered watershed-project problems. Ordinarily a project to meet one or more of these problems requires project action for installation and always requires group benefits for justification.



Additional lines are left for recognition of other projects under agricultural water management and nonagricultural water management, that will qualify under the terms of the Act. All of the problems listed may not occur in one watershed or planning unit.

Acreage having the problem, column (b). --Acreages called for in this column will be furnished by the Soil Conservation Service and Federal land-managing agencies.

Acreage needing project action, column (c). --Estimate and record the part of the acreages in column (c) that cannot be adequately protected or treated by individual or groups of land owners or operators with assistance available from programs other than the watershed program (P. L. 566). These same acreages also may require additional assistance under other programs.

Project action is considered as that cooperative action which can be effected only through formal organizations which have a legal status under State law that has usually given them the power to negotiate contracts, levy taxes, make assessments, or otherwise raise funds, and to disburse monies for the installation, operation, and maintenance of works of improvements. Requirements for project action are set forth in U. S. Dept. Agr. PA-298. The principal benefits of project action will ordinarily be off-site.

Number of farms affected, column (d). --Record the number of farms that have some acreage included in the figure in column (c). If urban areas are also served, this should be shown under remarks with an estimate of the population protected or served.

Remarks (e). --Pertinent remarks explaining the interest in the project or other information can be made here. The need for nonagricultural management developments will be recorded in this column.

Specialized assistance will be provided to the County Needs Committee by the Soil Conservation Service upon request in carrying out this part of the inventory.

#### C. Submittal of Inventory

Upon completion of the inventory the County Needs Committee will send copies of each of the tables, in the number specified by the State Plan to the State Needs Committee.

## INVENTORY OF WATERSHED PROJECT NEEDS

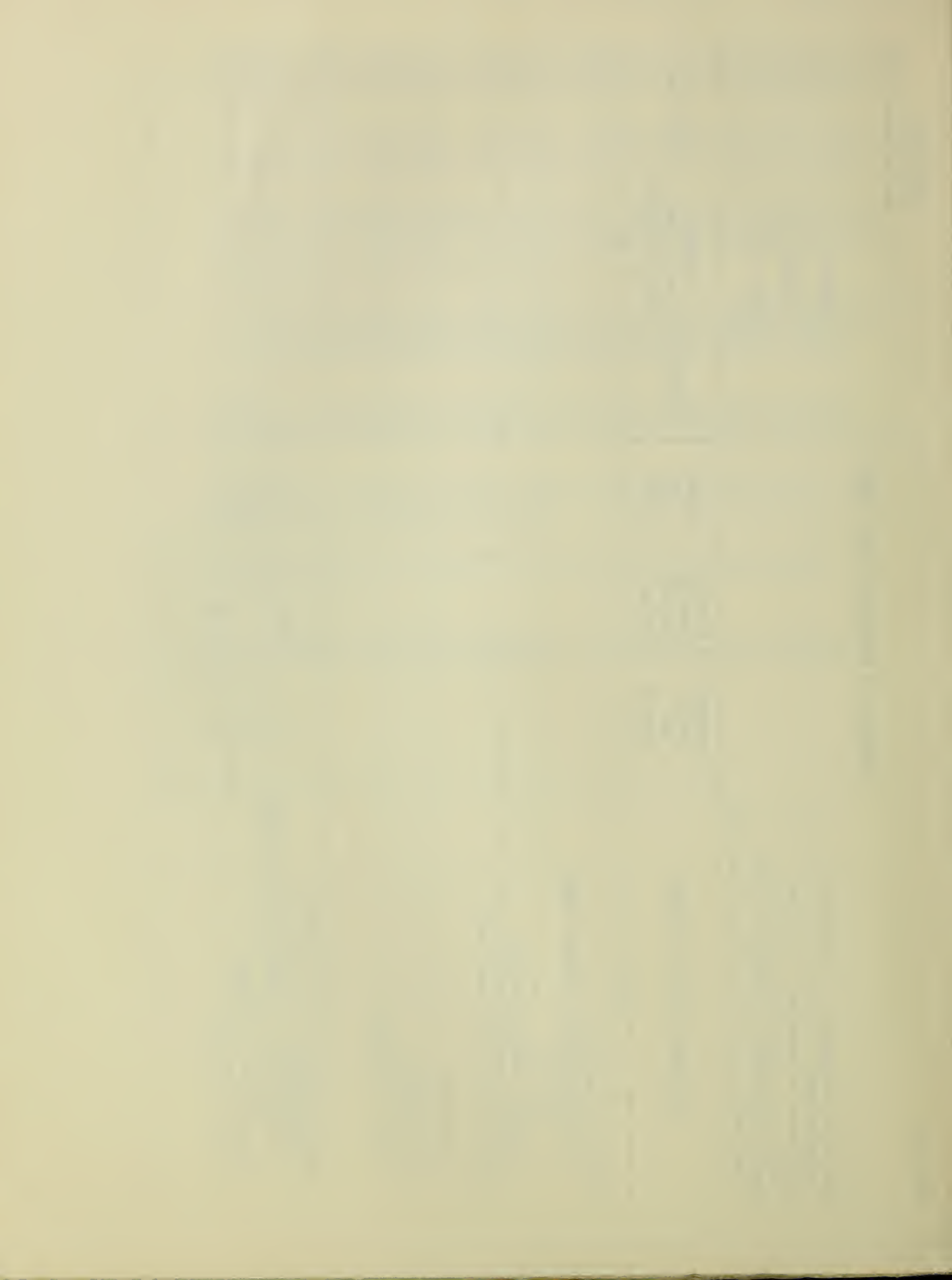
Numerical designation of watershed or  
planning unit \_\_\_\_\_  
Total acres in watershed or planning  
unit \_\_\_\_\_  
Acres in watershed or planning unit in  
the county \_\_\_\_\_

State \_\_\_\_\_

County \_\_\_\_\_

Date \_\_\_\_\_

Watershed project problems (a)	Acreage having the problem (b)	Acreage needing project action (c)	Number of farms (d)	Remarks (continue on back of page if additional space is needed) (e)
1. Flood prevention: a. Flood water and sediment damage reduction				
b. Erosion damage reduction				
2. Agricultural water management:				
a. Drainage				
b. Irrigation				
c. Other (specify)				
3. Nonagricultural water-management developments: a. Municipal or industrial water supply	XXX	XXX	XXX	
b. Recreation development	XXX	XXX	XXX	
c. Other (specify)	XXX	XXX	XXX	





APPENDIX

UNITED STATES DEPARTMENT OF AGRICULTURE  
Office of the Secretary  
Washington 25, D. C.

April 10, 1956

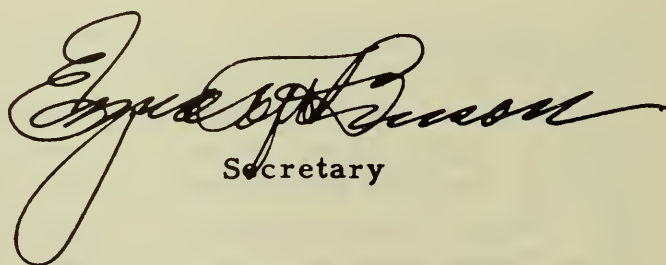
MEMORANDUM NO. 1396

National Inventory of Soil and Water Conservation Needs

The Department has constant need and use for information that can be gained only through a national inventory of soil and water conservation needs. This inventory would equip the Department to more effectively plan and carry out its responsibility in soil and water conservation. From it the Department could arrive at reasonable estimates of the magnitude and urgency of the various conservation measures needed to maintain and improve the country's productive capacity for all the people. The following policies, therefore, are hereby established:

1. A National Inventory of Soil and Water Conservation Needs will be made and kept current by the Department of Agriculture. This Inventory will be developed for each county in the United States and for appropriate subdivisions of the Territories. The goal for initial completion will be three years. The Forest Service has recently completed an intensive survey of the Nation's timber resources. County estimates for forestry, insofar as is possible, will be developed from this timber survey and other available forest resource information.
2. The Department agencies concerned with land use, soil and water conservation and the management of land resources which are to cooperate in this endeavor are: Agricultural Conservation Program Service, Agricultural Research Service, Commodity Stabilization Service, Federal Extension Service, Farmers Home Administration, Forest Service and Soil Conservation Service. Other agencies of the Department will be called upon where they can make a contribution. The Soil Conservation Service is hereby assigned responsibility for leadership.
3. A Department Soil and Water Conservation Needs Committee, comprised of one representative from each of the agencies named in paragraph 2, will be established. This committee, under leadership of a chairman from the Soil Conservation Service, will aid in the development and review of proposed procedures, furnish guidance in the cooperative effort, and make periodic reviews of progress for the information of the participating agencies.

4. A Soil and Water Conservation Needs Committee will be established in each State or Territory. Its membership will consist of representatives who work within the State or Territory for the Department agencies named in paragraph 2. The Soil Conservation Service representative will serve as chairman. The State Conservationist of the Soil Conservation Service will invite representation on the committee from the Land-Grant College, the State Forester, and other appropriate State agencies and groups who may be able to provide assistance and useful data. The State or Territorial committee will develop a plan for making the Inventory, and will submit it to the Administrator of the Soil Conservation Service for review and consideration of the Department Committee and the Assistant Secretary, Federal-States Relations.
5. Data will be developed separately for privately owned and publicly owned land. The Soil Conservation Service will be responsible for collecting basic physical data on soil and water on non-federally owned lands. The Forest Service will be responsible for the adequacy of the physical data on forestry on non-federally owned lands. The Forest Service and other land management agencies will be responsible for making the Inventory on lands under their jurisdiction.
6. Cooperation of State and local agencies, organizations, and groups concerned with soil, water, forest, range and wildlife conservation, utilization, and management will be actively solicited in the development and review of the Inventory. The Department of Agriculture will also seek and encourage the cooperation of other Federal agencies, responsible for land management activities, in the development of data which can be utilized in the National Inventory of Soil and Water Conservation Needs.

  
Secretary

## The State Plan

The State Plan for the National Inventory of Soil and Water Conservation Needs should list the entire membership and organization of the State Needs Committee and clearly indicate the responsibility of each agency. The membership should include representatives from all the agencies listed in Secretary's Memo. 1396 and those set forth in the policy statement. A calendar of work should be prepared to show the schedule of jobs and the expected date of completion of each job for either each county or territory or group of counties within the State that will have approximately the same date of completion. It should be noted that the goal for submitting the completed inventory for the State should be no later than December 31, 1959.

The plan should indicate it has been approved by the membership of the State Needs Committee.

### Outline of Items to be Included in State Plan

#### A. Organization and Membership of State Needs Committee

1. Meeting of members designated in policy statement and Secretary's Memo. 1396.
2. Decision by Committee of additional membership.
3. Plan of organization and suggested membership of County Needs Committees.
4. Responsibilities of each of the agencies and members.

#### B. Inventory and Evaluation of Materials Available for State and Counties

1. Completed surveys of soil and water situation. (Soil surveys, river basin studies, watershed studies, Forest Service inventories, county and area planning reports, SCS and ACPS estimates of conservation needs, and maps, aerial photography, etc.)
2. Research studies of physical and economic effects of land-management practices on (a) soil and water losses, (b) crop yields, and (c) costs and returns and other similar material.
3. County and State data from such sources as Census, ARS, State statisticians, county records and surveys on present land use, and farm and nonfarm land ownership.

#### C. Basic Economic Framework

1. The basic economic framework for the State Plan should take into consideration the basic economic framework on a national basis contained here and conditions that prevail in the State.
2. State estimates of major land uses in 1957 and projected estimates for 1975 will contain as a minimum the acres of cropland, pasture and range, forest and woodland, and other land. These estimates will be approved by the Department Committee before County Committees undertake estimates of expected land use in 1975.

#### D. Calendar of Events

1. Schedule by counties or groups of counties for:
  - a. Priorities of soil surveys for counties by SCS and by Agricultural Experiment Stations and other cooperators, or list by groups of counties that will have approximately the same schedule of work.



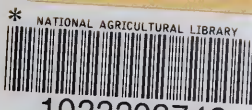
- b. Schedule of organization of County Needs Committees to conform with the expected availability of data by counties for part I and part II, columns (b) and (c), form N-1.
- c. Schedule of meetings to instruct County Needs Committees.
- d. Completion of part I A, and part II, column (b), form N-1, by State Needs Committee.
- e. Completion of part I B and part II, columns (c) and (d), by County Needs Committee.
- f. Review and approval of data in column (d), form N-1, by State Needs Committee.
- g. Completion of form N-2 and column (e), form N-1, by County Needs Committee.
- h. Review and approval of data in column (e), form N-1, and form N-2, by State Needs Committee.
- i. Completion of forms N-3 by County Needs Committee.
- j. Review and approval of data in forms N-3 by State Needs Committee.
- 2. Schedule of assembly of county reports into State reports.
- 3. Review and approval by State Needs Committee.
- 4. Schedule date of completion. (Should be as soon as feasible, but not later than Dec. 31, 1959.)

Note: The State Work Plan should be submitted by December 1, 1957.











≡ OUR SOIL ★ OUR STRENGTH ≡